عنوان مقاله:

Assessment and Simulation of Evaporation Front Depth and Intensity from Different Soil Surface Conditions Regarding Diverse Static Levels

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خلاصه مقاله:

The knowledge about soil evaporation is essential for improving water productivity (WP) in water-limited regions. Evaporation front (EF) depth and intensity (EI) are the most important components of agricultural activities and environmental issues, the physical characteristics of soil play a significant role in these fields. One of the key elements in physical soil properties is the relationship between the depth of the static surface and evaporation from the soil surface, especially in arid and semi-arid regions. In these regions, due to over-irrigation, the water level is very close to the ground surface which leads to salinization of the soil. The same situation may also be observed on the banks of lakes and rivers. In the present study, the EF depth and the EI of three different types of soil textures including sandy loam, loam, and clay loam are simulated in 30 cm, 40 cm, 70 cm static levels by using Gardener model. The findings of the study reveal that after 77 days, the EF depths were 6.14, 7.85, and 13.86 cm for sandy loam soil, 5.23, 7.27, and 12.2 cm for loam soil, and 5.4, 7.2, and 10.9 cm for clay loam soil in three static levels (i.e. 30, 40, and 70 cm), respectively. The deeper the static level, the deeper the depth of EF. Simulation of EF depth for sandy loam soil regarding loam and clay loam soils have more correspondence with the measured depth of the evaporation front. The measured and simulated amounts of EF depth and EI in three soil textures with three water levels were stabilized and compared by the F-statistical test models. Comparing the evaluated data of EF with the simulated figures of the evaporation front in textures and diverse static levels using the statistical test showed that a one to one line at a .significant level of 5% is suitable for sandy loam soil

کلمات کلیدی:

Evaporation Front, Soil Physical Characteristics, Static levels, Water productivity